

WHAT IS CLAIMED IS:

1. A fluorescent substance for display unit,  
comprising:

5 fluorescent substance matrix particles;

a first activator which is localized in a surface layer  
part of the fluorescent substance matrix particles; and

a second activator which is uniformly dispersed in the  
fluorescent substance matrix particles.

10 2. A fluorescent substance for display unit according  
to claim 1, wherein the fluorescent substance matrix  
particles are substantially formed of zinc sulfide.

3. A fluorescent substance for display unit according  
to claim 1, wherein the fluorescent substance matrix  
15 particles are substantially formed of zinc sulfide having a  
crystal structure composed mainly of hexagonal crystal.

4. A fluorescent substance for display unit according  
to claim 3, wherein the first activator is formed of at least  
one element selected from Cu and Au, and the second activator  
20 is formed of Al.

5. A fluorescent substance for display unit according  
to claim 3, wherein the fluorescent substance is a green  
light-emitting fluorescent substance having a composition  
represented substantially by a general formula:

25  $\text{ZnS:Cu}_a, \text{Al}_b$

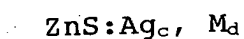
(where, a and b each represent an amount in a range of  
 $1 \times 10^{-5} \leq a \leq 1 \times 10^{-3}$  g and  $1 \times 10^{-5} \leq b \leq 5 \times 10^{-3}$  g with respect to  
1g of zinc sulfide which is the fluorescent substance matrix).

6. A fluorescent substance for display unit according to claim 3, wherein the fluorescent substance is used for a color cathode ray tube or a field emission type display unit.

7. A fluorescent substance for display unit according to claim 1, wherein the fluorescent substance matrix particles are substantially formed of zinc sulfide having a crystal structure composed mainly of cubic crystal.

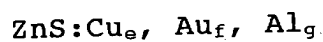
8. A fluorescent substance for display unit according to claim 7, wherein the first activator is formed of at least one element selected from Ag, Cu and Au, and the second activator is at least one element selected from Al and Cl.

9. A fluorescent substance for display unit according to claim 7, wherein the fluorescent substance is a blue light-emitting fluorescent substance having a composition represented substantially by a general formula:



(where, M represents at least one type of element selected from Al and Cl, a and b each represent an amount in a range of  $1 \times 10^{-5} \leq c \leq 2 \times 10^{-3}$  g and  $1 \times 10^{-5} \leq d \leq 5 \times 10^{-3}$  g with respect to 1g of zinc sulfide which is the fluorescent substance matrix).

10. A fluorescent substance for display unit according to claim 7, wherein the fluorescent substance is a green light-emitting fluorescent substance having a composition represented substantially by a general formula:



(where, e, f and g each represent an amount in a range of  $1 \times 10^{-5} \leq c \leq 1 \times 10^{-3}$  g,  $0 \leq d \leq 2 \times 10^{-3}$  g,  $1 \times 10^{-5} \leq c+d \leq 2 \times 10^{-3}$  g

and  $1 \times 10^{-5} \leq e \leq 5 \times 10^{-3}$  g with respect to 1g of zinc sulfide which is the fluorescent substance matrix).

11. A fluorescent substance for display unit according to claim 7, wherein the fluorescent substance is used for a color cathode ray tube.

12. A process for producing a fluorescent substance for display unit comprising fluorescent substance matrix particles containing a first activator and a second activator, comprising:

10 containing uniformly the second activator in the fluorescent substance matrix particles; and

doping the first activator into the surface layer part of the fluorescent substance matrix particles containing the second activator.

15 13. A process for producing a fluorescent substance for display unit according to claim 12, wherein the first activator doping step has a step of adhering a metal element configuring the first activator or a compound containing the metal element to the surface of the fluorescent substance matrix particles and firing them in the adhered state.

20 14. A process for producing a fluorescent substance for display unit according to claim 12, wherein the fluorescent substance matrix particles are substantially formed of zinc sulfide having a crystal structure composed mainly of hexagonal crystal or cubic crystal.

25 15. A process for producing a fluorescent substance for display unit according to claim 14, wherein the first activator is formed of at least one element selected from Ag,

Cu and Au, and the second activator is formed of at least one element selected from Al and Cl.

16. A color display unit, comprising:

a fluorescent screen having the fluorescent substance  
5 for display unit according to claim 1;  
an electron source which irradiates an electron beam to  
the fluorescent screen to emit light; and  
an envelope which vacuum-seals the electron source and  
the fluorescent screen.

10 17. A color display unit according to claim 16,  
wherein the fluorescent screen contains a blue light-emitting  
fluorescent substance, a green light-emitting fluorescent  
substance and a red light-emitting fluorescent substance, and  
has the fluorescent substance for display unit as the green  
15 light-emitting fluorescent substance.

18. A color display unit according to claim 17,  
comprising a color cathode ray tube or a field emission type  
display unit.

19. A color display unit according to claim 16,  
20 wherein the fluorescent screen contains a blue light-emitting  
fluorescent substance, a green light-emitting fluorescent  
substance and a red light-emitting fluorescent substance, and  
has the fluorescent substance for display unit as at least  
either of the blue light-emitting fluorescent substance and  
25 the green light-emitting fluorescent substance.

20. A color display unit according to claim 19,  
comprising a color cathode ray tube.